NAME: DATE:

p1020: graded take-home open-note practice exam (version 214)

Question 1

Let f represent a function. If $f[36] = 43$, then there exists a knowable solution to the equation below.

$$y = \frac{f[12\,(x - 22)] - 15}{7}$$

Find the solution.

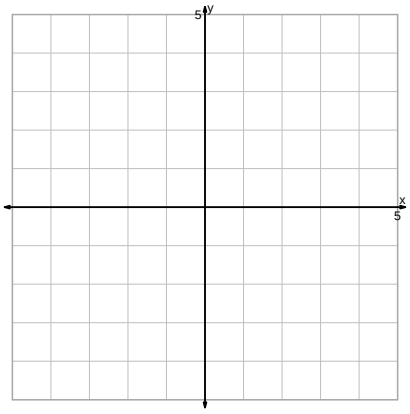
$x =$

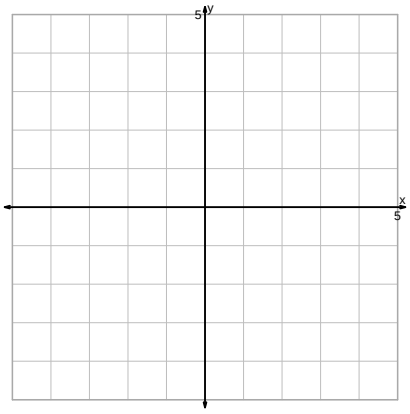
$y =$

Question 2

Graph the equations accurately. For each integer-integer point on the parent, indicate the corresponding point precisely. Also, with dashed lines, indicate any asymptotes.

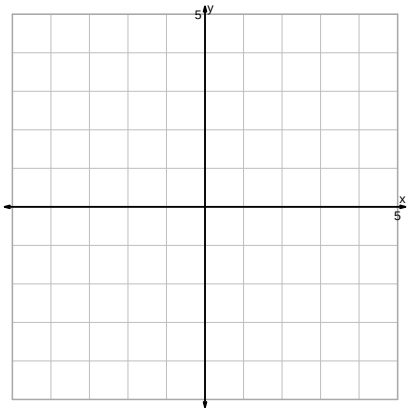
$y = -\sqrt{x}$

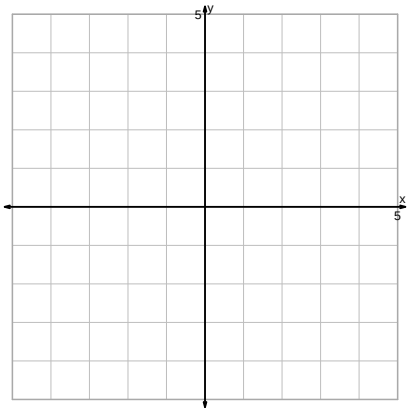




$y = \sqrt[3]{x+2}$

$y = 2^{-x}$

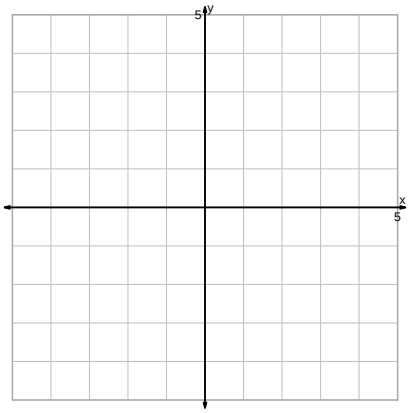


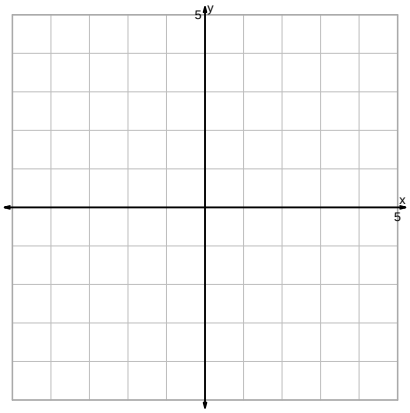


$y = \log_2\left(\frac{x}{2}\right)$

Question 2 continued...

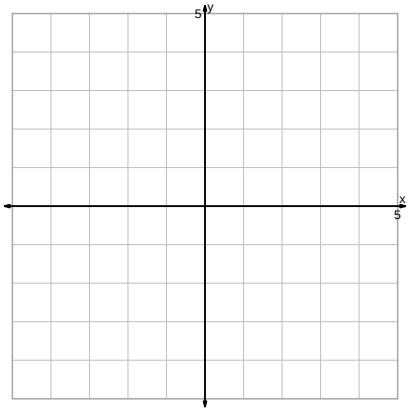
$y = (2x)^2$

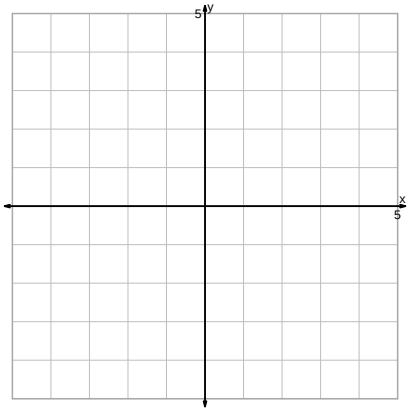




$y = 2 \cdot x^2$

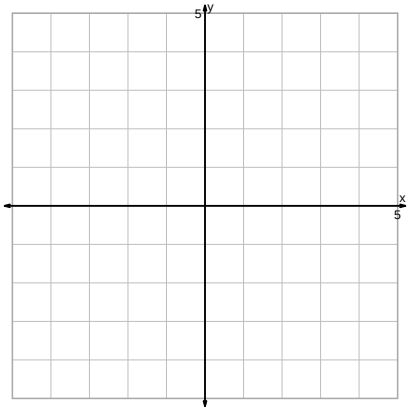
$y = \frac{x^3}{2}$

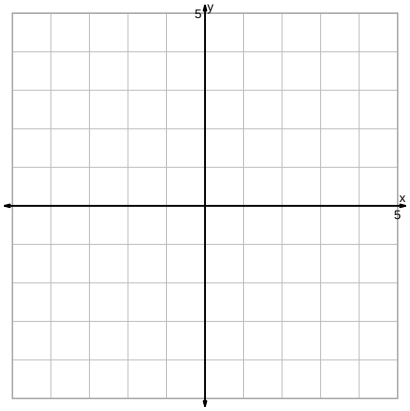




$y = \sqrt[3]{x} + 2$

$y = x^3 - 2$

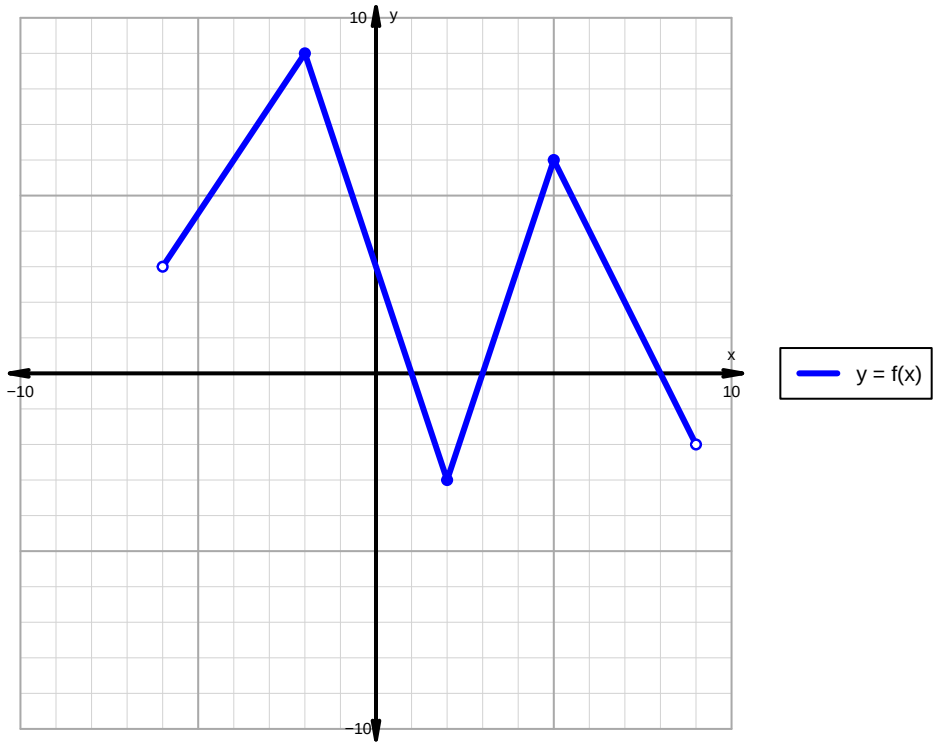




$y = 2^{x-2}$

Question 3

A function is graphed below.



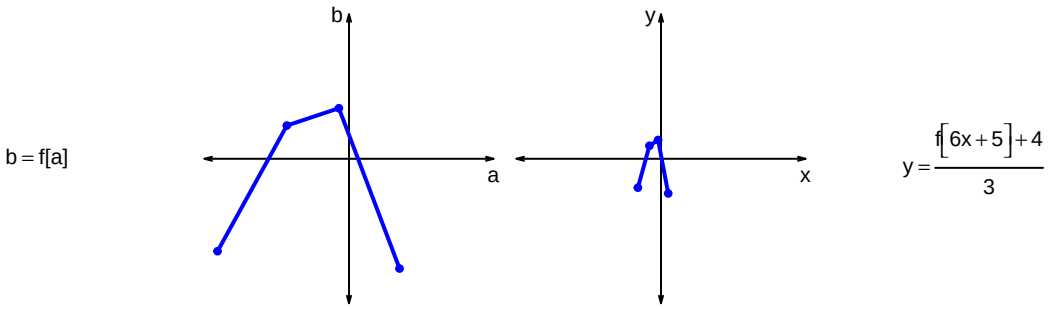
Indicate the following intervals using interval notation.

Feature	Where
Positive	
Negative	
Increasing	
Decreasing	
Domain	
Range	

Question 4

Let f represent a function. The curves $b = f[a]$ and $y = \frac{f[6x+5]+4}{3}$ are represented below in a table and on graphs.

a	b	x	y
-91	-64	-16	-20
-43	23	-8	9
-7	35	-2	13
35	-76	5	-24



a. Write formulas for calculating x from a and calculating y from b. (Or, write the coordinate transformation formula.)

b. What geometric transformations (using words like translation, stretch, and shrink), and in what order, would transform the first curve $y = f[x]$ into the second curve $y = \frac{f[6x+5]+4}{3}$?

Question 5

A parent square-root function is transformed in the following ways:

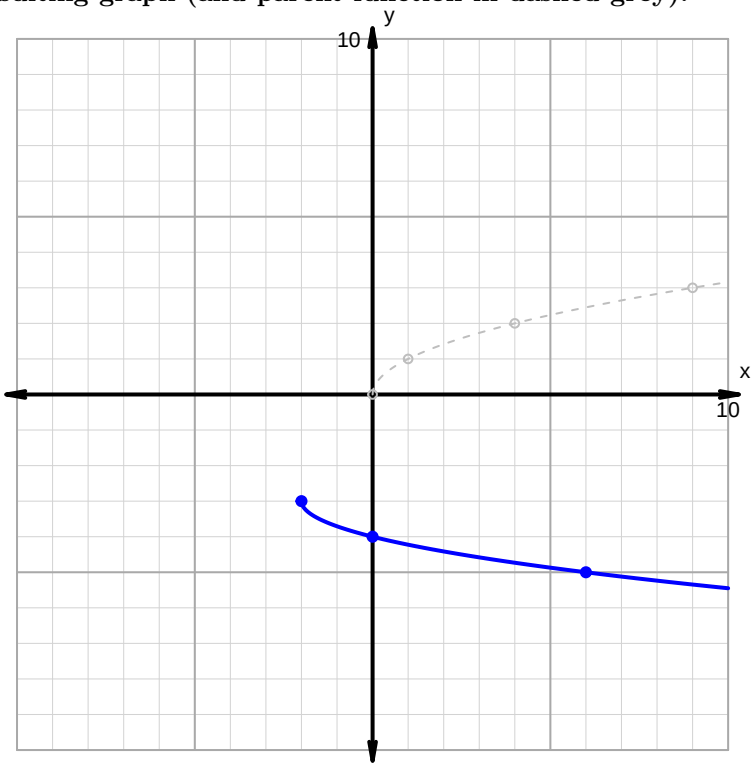
Horizontal transformations

1. Translate left by distance 1.
2. Horizontal stretch by factor 2.

Vertical transformations

1. Vertical reflection over x axis.
2. Translate down by distance 3.

Resulting graph (and parent function in dashed grey):

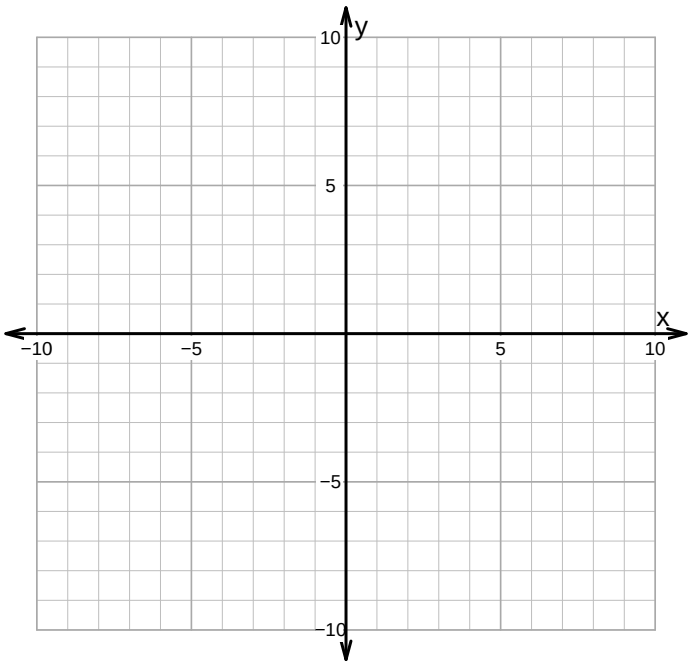


- What is the equation for the curve shown above?

Question 6

Make an accurate graph, and describe locations of features.

$$y \;=\; 3 \cdot |x + 6| - 6$$



Feature	Where
Domain	
Range	
Positive	
Negative	
Increasing	
Decreasing	